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10/601,910	06/24/2003	Takahiro Amanai	12706/4	7587

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EXAMINER	
MARTINEZ, JOSEPH P	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s).	
	10/601,910	AMANAI, TAKAHIRO	
	Examiner	Art Unit	
	Joseph P. Martinez	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-20* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7-23-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

Claims 1 and 5 are objected to because of the following informalities: for instance, claim 1, ln. 6-7, recites -- side surfaces of the optical elements are disposed in a surface expands in a direction of the optical axis linearly --. Appropriate correction is required. For purposes of examination, the office will interpret the claim to read, -- side surfaces of the optical elements are disposed in a surface, wherein the surface expands linearly in a direction of the optical axis --.

Claim 15 is objected to because of the following informalities: claim 15, line 7 states -- in a direction the optical axes --. Appropriate correction is required. For purposes of examination, the office will interpret the claim to read, -- in a direction of the optical axes --.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 18, variables ST, TD and MD are not defined within the claim. In claim 20, variables Φ and Φ_A are not defined within the claim.

Claim Rejections - 35 USC § 102

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 4-6, 8 and 15-17 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Bowen et al. (6324010).

Re claims 1 and 5, Bowen et al. teach for example, an image pickup lens unit comprising; an optical system; and a plurality of optical elements (lens arrays 10, fig. 9B) which form the optical system, wherein a plurality of optical elements are cemented (using epoxy 91, fig. 9B) mutually of which optical axes are aligned (col. 5, ln. 24-32); side surfaces of the optical elements are disposed in a surface which expands linearly (protrusion 123, fig. 14) in a direction

of the optical axes; and the same surface indicates a surface which expands linearly in a direction along the optical axis (fig. 14).

Re claim 2, Bowen et al. teach for example, an image pickup lens unit which is produced by fitting a plurality of optical element arrays (lens arrays 10, fig. 9B) mutually which are provided with a plurality of optical elements of which optical axes are aligned such that optical axes of a plurality of the optical element arrays are aligned with the optical axes of a plurality of the optical elements (col. 5, ln. 24-32) and cutting (col. 5, ln. 47-49) the cemented (using epoxy 91, fig. 9B) optical element arrays in a direction of the optical axes of a plurality of the optical elements between the optical elements.

Re claim 15, Bowen et al. further teach for example, an image pickup unit having a plurality of optical elements which is produced by: preparing a plurality of optical element arrays in which a plurality of optical elements in a plurality of the optical elements (lens arrays 10, fig. 9B) are disposed; aligning optical axes of a plurality of the optical elements (col. 5, ln. 24-32); cementing a plurality of the optical element arrays in a direction of the optical axes of a plurality of the optical elements (using epoxy 91, fig. 9B); and cutting (col. 5, ln. 47-49) between the neighboring optical elements in a direction the optical axes of a plurality of the optical elements.

Re claim 16, Bowen et al. further teach for example, an image pickup unit having at least three optical elements (triplet in fig. 9D) formed by a first optical element, a second optical element, and a third optical element produced by: preparing a first optical element array in which a plurality of the first optical elements are disposed, a second optical element array in which a plurality of the second optical elements are disposed, and a third optical element array in which a plurality of the third optical elements are disposed (triplet in fig. 9D); aligning the optical axis of

the first optical element and the optical axis of the third optical element (col. 5, ln. 24-32) and cementing (using epoxy 91, fig. 9B) the first optical element array and the third optical element array in the direction of the optical axes of a plurality of the optical elements; and cutting (col. 5, ln. 47-49) between the neighboring optical elements in a direction of the optical axes of a plurality of the optical elements.

Re claim 4, Bowen et al. further teach for example, an image pickup lens unit according to Claim 1 which satisfies a formula such as TT<20 mm wherein a total cutting length in a direction of optical axes of a plurality of the optical elements is defined as a distance TT (col. 5, ln. 57-59, wherein the office interprets the thickness of the lens arrays and spacers is less than 20mm and therefore the cutting length in the direction of the optical axis falls within the claimed range).

Re claim 6, Bowen et al. further teach for example, the optical element arrays are formed by disposing the optical elements in a second dimension (col. 3, ln. 16-18, wherein Bowen et al. suggest both surfaces having optical power.

Re claim 8, Bowen et al. further teach for example, an image pickup lens unit having 10 or less air surfaces (fig. 3, col. 3, ln. 18-20).

Re claim 17, Bowen et al. further teach for example, the optical element has a flange section (fig. 14, not labeled, section between lens and protrusion 123) which is disposed on an optical surface through which a light passes and on an outer peripheral section (fig. 14, not labeled, section after protrusion 123) on the optical surface; a protruding section is formed on an outer peripheral section of the flange section (the office interprets fig. 14, not labeled, section after protrusion 123 to be protruding in a direction orthogonal to the optical axis); an interval is

formed between the protruding sections which neighbors each other in a direction of the optical axis (fig. 3, not labeled, end sections of lens arrays 10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al. (6324010) as applied to claim 1 in view of Fujimoto et al. (6373635).

Re claim 7, Bowen et al. further teach for example, an image pickup lens unit which is formed by 10 or less optical elements having a power and including at least a positive lens (fig. 9B).

But, Bowen et al. fail to explicitly teach, at least a negative lens which is disposed so as to neighbor the positive lens.

However, within the same field of endeavor, Fujimoto et al. teach for example, a negative lens (fig. 19B) which is disposed so as to neighbor the positive lens (col. 9, ln. 49-53).

Therefore, it would have been obvious to one of ordinary skill in the art at t he time the invention was made to modify the teachings of Bowen et al. with the negative lens of Fujimoto et al. in order to provide produce a non-inverted or non-magnified image.

Re claim 9, Fujimoto et al. further teaches for example, a surface except an optical surface in the optical element is treated so as to absorb a light (light shielding layer 15, fig. 6).

2. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al. (6324010) as applied to claim 1 in view of Fujimoto et al. (6707613).

Re claim 10, Bowen et al. teach the image pickup device as disclosed above.

But, Bowen et al. fail to explicitly teach an optical filter having a side surface which is disposed in the same surface as the side surface of the optical elements is cemented to the optical element.

However, within the same field of endeavor, Fujimoto et al. teach for example, an optical filter (light shield 3, fig. 1) having a side surface (upwards projections 37, fig. 1) which is disposed in the same surface as the side surface of the optical elements is cemented to the optical element.

Re claim 11, Bowen et al. teach the image pickup device as disclosed above.

But, Bowen et al. fail to explicitly teach a hood section having a side surface which is disposed in the same surface as the surface of the optical element is cemented to the optical element.

However, within the same field of endeavor, Fujimoto et al. teach for example, a hood (light shield 3, fig. 1) section having a side surface (upwards projections 37, fig. 1) which is

disposed in the same surface as the surface of the optical element is cemented to the optical element.

Re claim 12, Fujimoto further teaches for example, an image pickup device (light receiving element 74, fig. 8) which is provided with the image pickup lens unit.

3. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al. (6324010) in view of Fujimoto et al. (6707613) as applied to claim 12 and further in view of Horiguchi (4733096).

Re claims 13 and 14, Bowen et al. in view of Fujimoto et al. teach the image pickup device as disclosed above.

But, Bowen et al. in view of Fujimoto et al. fail to explicitly teach the image pickup elements are cemented to an optical element which forms a final surface in the image pickup lens unit.

However, within the same field of endeavor, Horiguchi teaches for example, the image pickup elements (sensor elements 44, fig. 2) are cemented to an optical element which forms a final surface in the image pickup lens unit (col. 2, ln. 19-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Bowen et al. in view of Fujimoto et al. to include cementing the image pickup elements to the optical element as taught by Horiguchi in order to provide increased sensor output.

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al. (6324010).

Re claim 19, Bowen et al. teach the image pickup lens as disclosed above, including the use of various lenses.

But, Bowen et al. fail to explicitly teach θ is 60 degrees or smaller in the optical element under condition that the θ is defined as an angle made between the optical axis in an optical surface in the optical element and a normal in an effective diameter of the optical surface.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have θ be 60 degrees or smaller in the optical element under condition that the θ is defined as an angle made between the optical axis in an optical surface in the optical element and a normal in an effective diameter of the optical surface, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Bowen et al. to have θ be 60 degrees or smaller in the optical element under condition that the θ is defined as an angle made between the optical axis in an optical surface in the optical element and a normal in an effective diameter of the optical surface to effectively direct light through the image pickup device.

Allowable Subject Matter

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art taken alone or in combination fails to anticipate or fairly suggest the limitations of the claims, in such a manner that a rejection under 35 USC 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in dependent claim 3, wherein the claimed invention comprises an image pickup lens which satisfies a formula such as $1.0<MD/ED<4.0$ wherein a maximum outermost diameter of the image pickup lens unit in a cross section which crosses orthogonally to the optical axes is defined as an MD and a maximum beam effective diameter in an optical system which is formed by a plurality of the optical elements is defined as an ED, as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph P. Martinez whose telephone number is 571-272-2335. The examiner can normally be reached on M-F 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
4-29-04

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